



GLAC-IRWMP

Flood Management Objectives & Targets

Introduction

For the Flood Management objective of the GLAC-IRWMP, the goals are to reduce the risk of flooding and to manage sediment using integrated flood management approaches. To identify a community's flood risk, the Federal Emergency Management Agency (FEMA) conducts a Flood Insurance Study. The study includes statistical data for river flow, storm tides, hydrologic/hydraulic analyses, and rainfall and topographic surveys. FEMA uses this data to create the flood hazard maps that outline different flood risk areas. Land areas that are at high risk for flooding are called Special Flood Hazard Areas (SFHAs), or floodplains. These areas are indicated on Flood Insurance Rate Maps (FIRMs).

Many private and public parcels as well as buildings on these parcels are within the SFHAs. This technical memorandum provides a breakdown of where and what land uses are within the SFHA for the GLAC Region. These are considered unmet drainage needs that may be addressed as part of the IRWMP. In addition, many locations within the GLAC Region are anticipated to accumulate significant amounts of sediment over the course of the next 20 years, putting Subregions at risk of future flooding and/or reduced water conservation benefits.

By identifying both of these needs, unmet drainage needs and sediment management, flood management objectives and targets can be established to define the issue and provide a baseline for moving forward and from which to measure progress.

It is important to properly manage land uses, flood flows, and sediment deposition in order to adequately protect public safety, property, and the quality of life in local communities. Many factors must be considered to ensure the flood control system remains operational well into the future. The accumulation of sediment within reservoirs, debris basins, streams, and coastal areas must be considered in this process. Accumulation of sediment in these areas can reduce the capacity for flood management (in reservoirs and basins), decreases potential water supply benefits, and increases the risk of flooding. When accumulation occurs within the stream channel, localized street flooding or inundation of public and private property may occur. Recent wildfires have led to an increased inflow of sediment and debris within the Los Angeles County Flood Control District facilities. This has put additional pressure on the remaining capacity of existing sediment placement sites, where the Flood Control District traditionally placed sediment. Proper management of this sediment is necessary to protect public safety, public and private property, and ensure adequate quality of life.

Within the coastal environment, watershed planning is critical for sediment management especially around river mouths and other near shore coastal areas. As such, it is important to consider multi-purpose integrated planning such as the Coastal Regional Sediment Management Plan – Los Angeles County which is in draft form and is being authored by the Coastal Sediment Management



Workgroup, the Army Corps of Engineers, and several other regional partners. In addition to this, several other planning documents should be considered, including the Army Corps of Engineers Multipurpose Planning (ACOE, 2012); and the Los Angeles County Sediment Management Plans (LACDPW and LACFCD, 2012). By considering these plans when developing integrated flood and sediment management targets, comprehensive and integrated goals can be met at a local and regional level.

The following sections provide the overall goal as well as objectives and discussion of target development and established targets for unmet drainage needs and sediment management requirements.

Goal:

Reduce flood risk to protect life and property using an integrated flood management approach.

Unmet Drainage Needs

Objective

Reduce flood risk in flood prone areas by either increasing protection or decreasing needs¹ using integrated flood management approaches.

Targets

The targets were developed through a process using geospatial data that included the currently defined 2011 SFHAs (processed from FEMA FIRM maps)², parcel ownership, parcel land use categories, and whether buildings or structures are present. The target acreages listed in Table 1 below consist of the sum of parcel areas in each Subregion that intersect with refined SFHAs, which consisted of a subset of the 2011 SFHAs categorized as containing structures but not categorized as reservoirs, dams, lakes, debris basins, floodways, flood structures, detention basins, harbors, marina, tidal zones and a general water category. Land use data were compiled from 2005 and 2008 surveys for the Counties of Ventura, Los Angeles, and Orange. These geospatial coverages were clipped to the defined IRWMP drainage areas by Subregion. Because the supplied SFHA layer did not, in all instances, match up with the land uses and/or aerial photography, some adjustments were necessary to determine land use category boundaries. Parcels that intersected the 2011 refined SFHA were selected to determine parcel area that is partially or wholly within the SFHA. The presence of structures was determined through development records and was defined as

¹ Increasing protection would be accomplished by providing physical management techniques, whereas decreasing risk might include purchasing flood prone properties and removing unnecessary structures that might otherwise be subject to flooding and/or flood insurance claims.

² FEMA is currently in the process of revising the process of determining SFHAs. When new SFHAs are finalized by FEMA, the Flood Management maps and goals should be updated accordingly.



presence or absence of a structure. Because development records were not available for the counties of Ventura and Orange, the qualifying parcels that were at least partially within the SFHA, within the IRWMP boundaries, and had structures were identified using aerial imagery. Land use categories from the 2008 effort were used as the defined land uses. However, in some cases the 2008 land uses were further refined by using 2005 land use categories (e.g., single family residential to include high density and low density single family residential; agriculture to include animal husbandry and nurseries and vineyards; and open space and recreation to include golf courses).

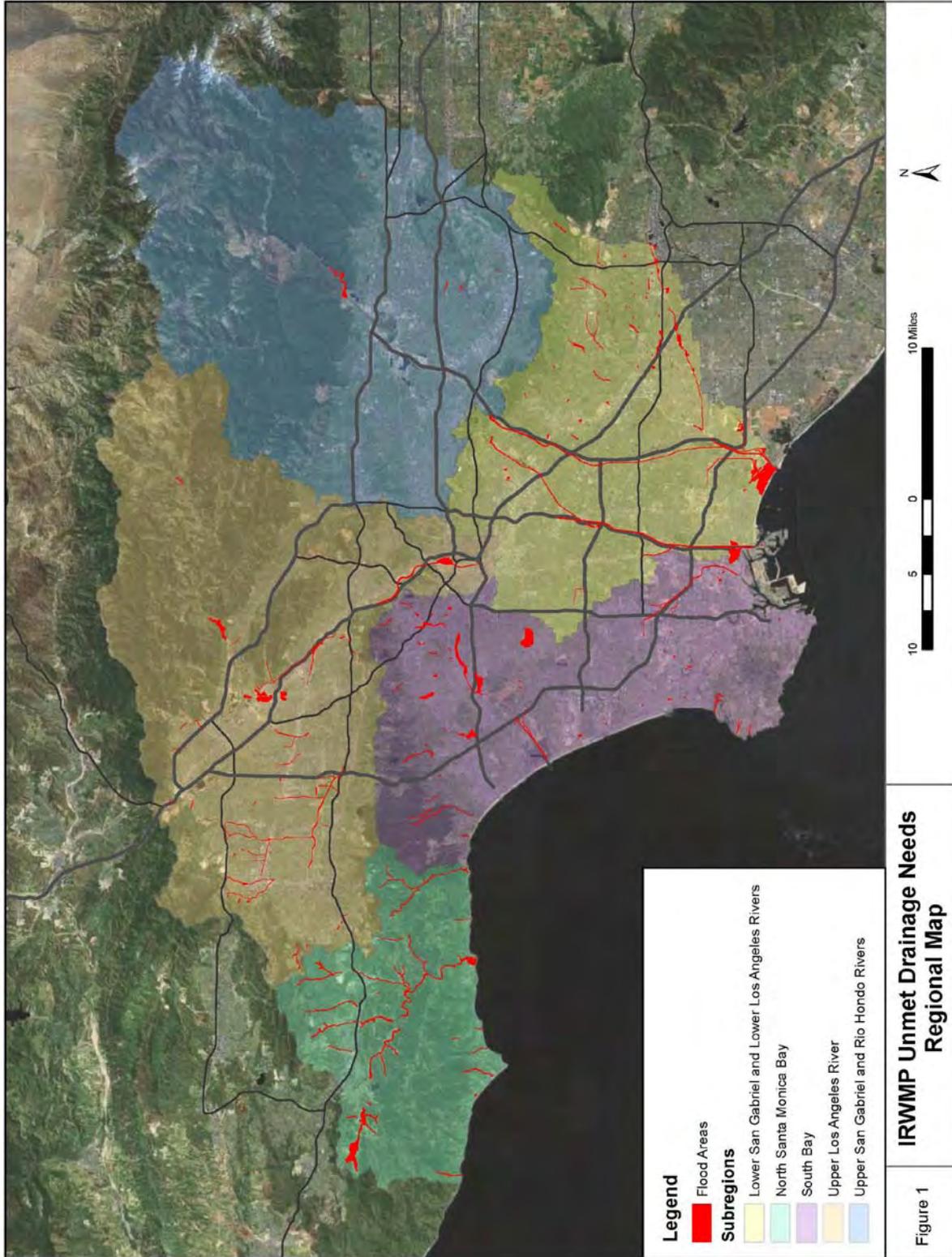
Table 1 shows Unmet Drainage Needs targets, expressed in acres for each Subregion which were calculated based on the method described above. These areas are shown in Figure 1 below, and in figures A-1 through A-5 in Appendix A.

Table 1. Unmet Drainage Needs Targets Reported by Subregion

| Unmet Drainage Needs (Acres) | North Santa Monica Bay* | Upper Los Angeles River | Upper San Gabriel and Rio Hondo Rivers | Lower San Gabriel and Los Angeles Rivers* | South Bay* | GLAC Region |
|------------------------------|-------------------------|-------------------------|--|---|--------------|-------------|
| | Subregion Total | 2,760 | 1,970 | 250 | 4,090 | |

*Note that coastal flooding issues must also be addressed yet targets were not developed as part of this IRWMP update. See the final IRWM Plan for discussions on climate change.

Total Regional acreage targeted as Unmet Drainage needs is about 11,380 acres. Each parcel, and the land upstream, provides a management opportunity in which drainage needs can be mitigated to reduce high flooding risk. For integrated planning purposes, these areas could be considered as properties that may have risk to human safety and property. Properties with structures may have an increase in safety and property damage risk. By identifying these properties as targets within the plan, especially those with structures, a longer term solution can be developed to reduce this risk.





Sediment Management

Objective

Manage sediment through removal and/or other techniques using integrated flood management approaches.

Targets

Targets for sediment removal were provided by the Los Angeles County Flood Control District, based on 20-year projections presented in the agency’s Sediment Management Plan for maintenance of regional reservoirs and debris basins. For reservoirs, planning quantities were based on a goal of no net increase in the amount of accumulated sediment in the reservoirs, which was determined based on historical records. For debris basins, historical records were used to estimate sediment inflow volumes over 20-year rolling periods. The planning quantity was the 80th percentile of these datasets, split up among the Flood Maintenance Areas (South, West, and East).

The reservoirs and debris basins were mapped and the projections were summed according to the Subregion the reservoir or debris basin facility was located in to produce the targets presented below.

The following table provides the sediment targets determined in the by LA County Public Works Sediment Management Plan. Values include combined volumes of reservoirs and debris basins by Subregion. The locations of these reservoirs and debris basins are shown in Figures 2 below, and in figures B-1 through B-5 in Appendix B.

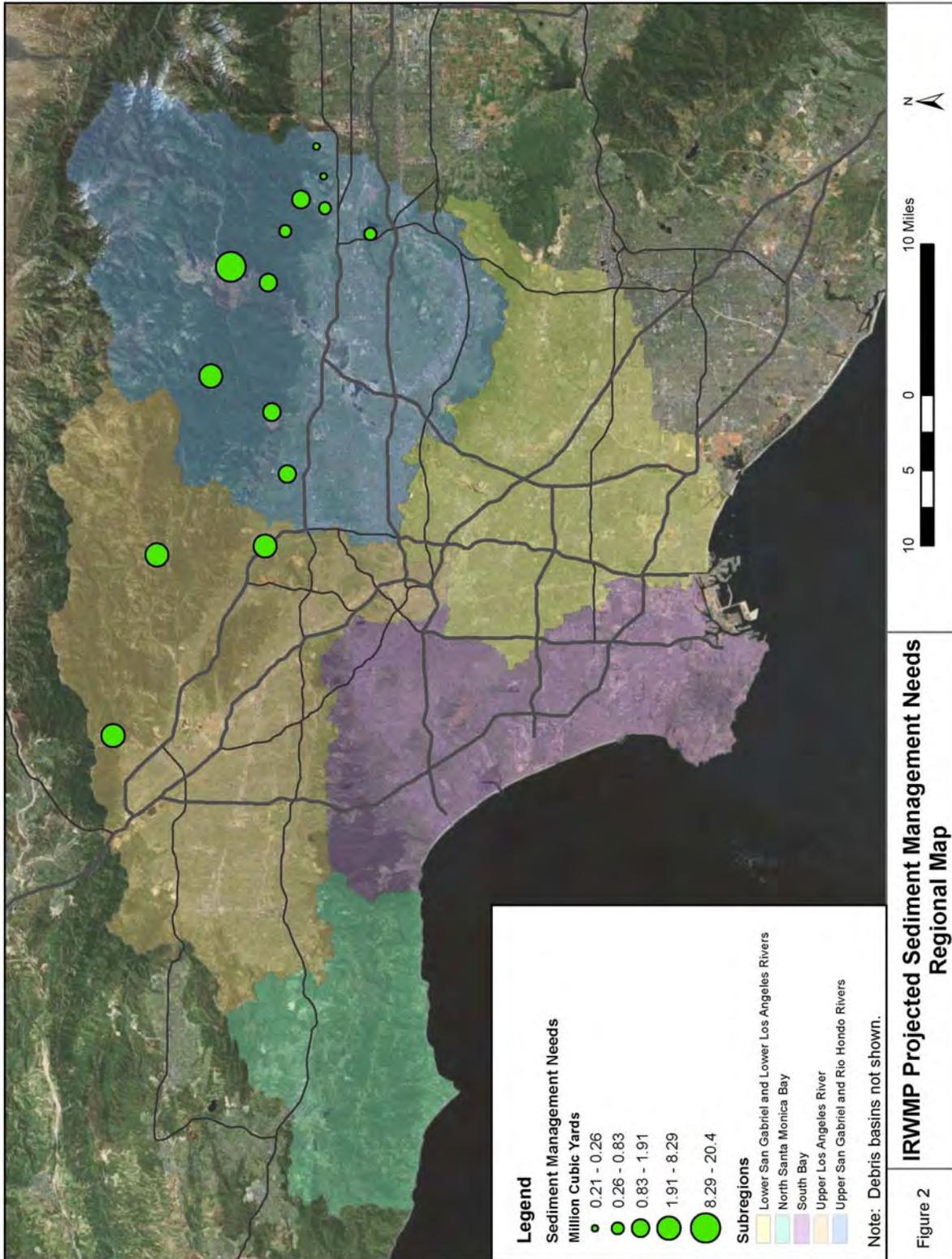
Table 2. Sediment Management Targets Reported by Subregion

| Sediment Management Needs (Million Cubic Yards) | North Santa Monica Bay* | Upper Los Angeles River | Lower San | | | GLAC Region |
|---|-------------------------|-------------------------|--|---------------------------------|------------|-------------|
| | | | Upper San Gabriel and Rio Hondo Rivers | Gabriel and Los Angeles Rivers* | South Bay* | |
| Subregion Total | 0.23 | 27.6 | 39.7 | -- | -- | 67.5 |

*Note that coastal sediment management issues must also be addressed yet targets were not developed as part of this IRWMP update.

The total 20-year planning quantity for the target sediment management reduction is 67.5 MCY, with approximately 57.9 MCY resulting from reservoirs and 9.6 MCY from debris basins.

The Sediment Management strategic plan outlines potential alternatives to achieve these targets. The alternatives will be explored in the future.





The purpose of this Technical Memorandum was to show areas that have been identified as potential flooding hazard areas and locations requiring sediment management based upon the datasets available to the Region at the time of publication. A dataset from this analysis could also be added to the Region's Benefits geodatabase. As new data becomes available it is recommended that the datasets be updated. Other next steps to further refine the objectives would be to conduct a risk and damage potential analysis that could help prioritize the parcel areas associated with the flooding hazard areas based upon their development, use and risk for damage and or level of damage that could occur.

References

Coastal Regional Sediment Management Plan – Los Angeles County. Draft Version. Excerpt provided by Heather Schlosser, May 15, 2012.

Los Angeles County Sediment Management Strategic Plan 2012-2032. County of Los Angeles Department of Public Works and the Los Angeles County Flood Control District. Draft April 23, 2012. <http://dpw.lacounty.gov/lacfd/sediment/stplan.aspx>. Accessed May 9, 2012.

U.S. Army Corps of Engineers Planning - Planning Guidance Notebook. 22 April 2000. http://publications.usace.army.mil/publications/eng-regs/ER_1105-2-100/a-e.pdf. Accessed May 18, 2012.

GIS and land use data provided by County of Los Angeles and the Southern California Association of Governments.



Appendix A – Maps of Unmet Drainage Need Targets by IRWMP Subregion

The following pages contain the subregional maps showing Unmet Drainage Needs for:

- **North Santa Monica Bay (A-1)**
- **Upper Los Angeles River (A-2)**
- **Upper San Gabriel and Rio Hondo (A-3)**
- **Lower San Gabriel and Los Angeles Rivers (A-4)**
- **South Santa Monica Bay (A-5)**

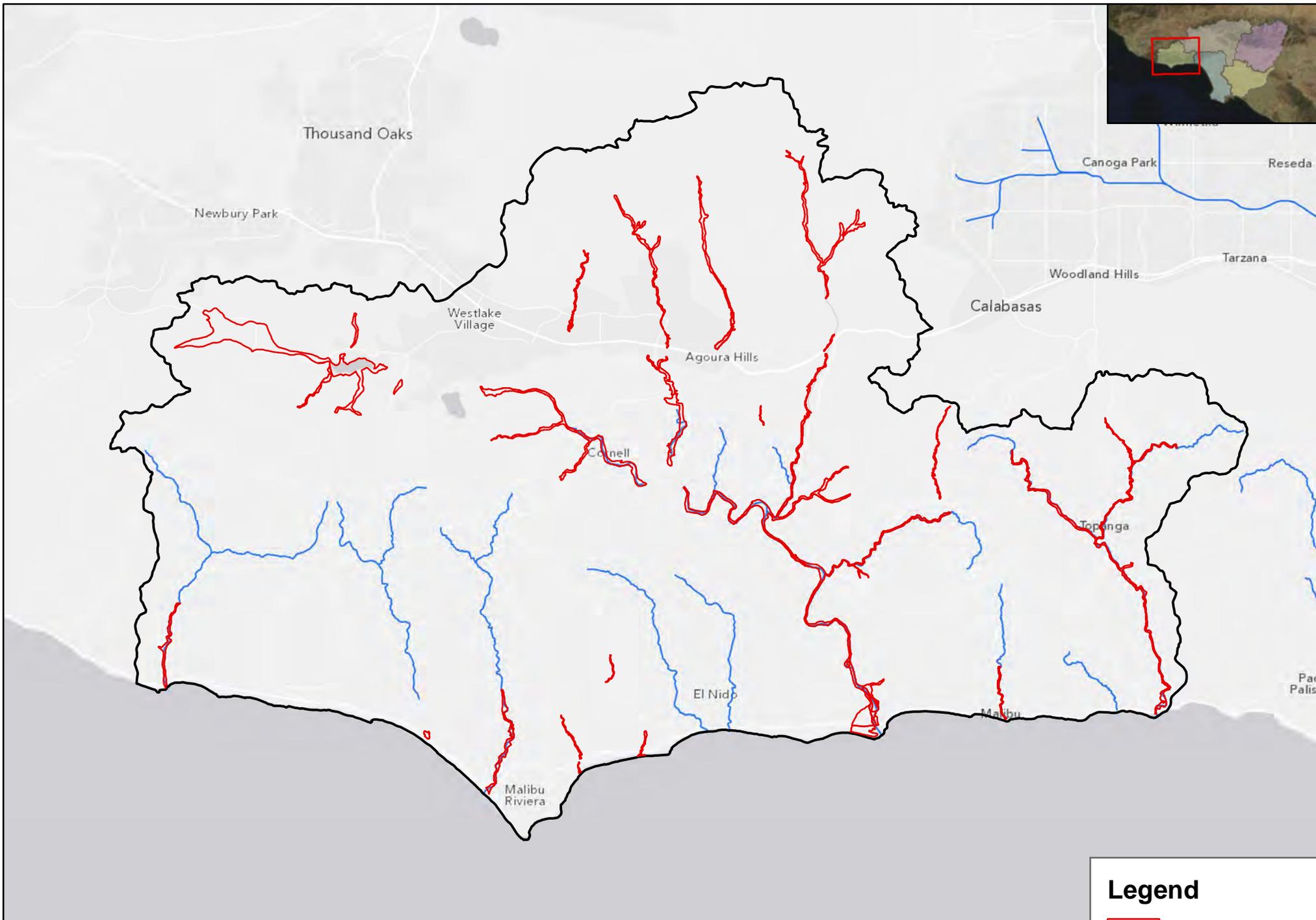


Figure A1

IRWMP Flood Targets
North Santa Monica Bay Subregion

0 2.5 5 10 Miles



Legend

- Flood Areas
- Major Channels

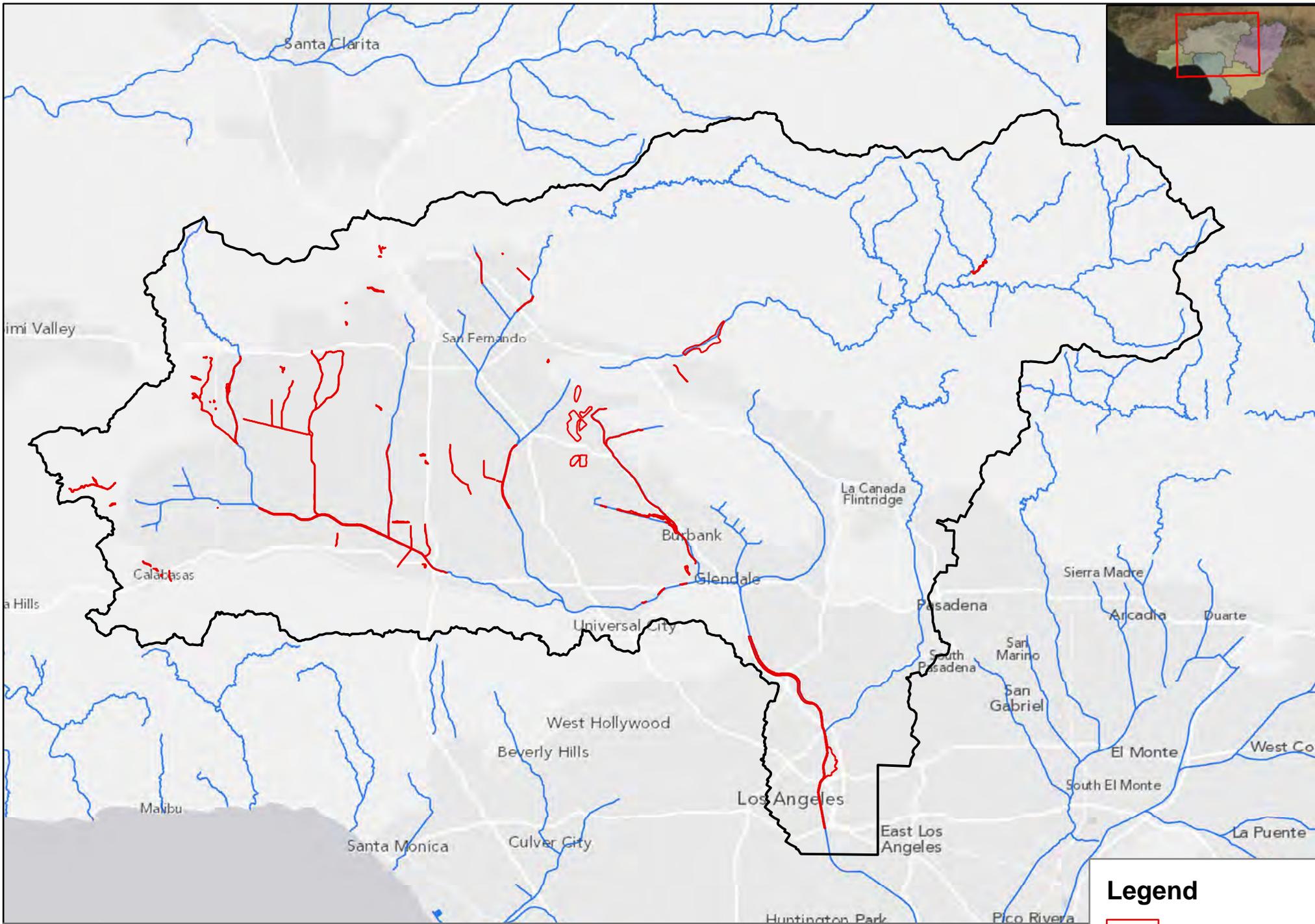
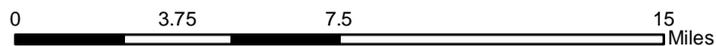


Figure A2

IRWMP Flood Targets
Upper Los Angeles River
Subregion



Legend

- Flood Areas
- Major Channels

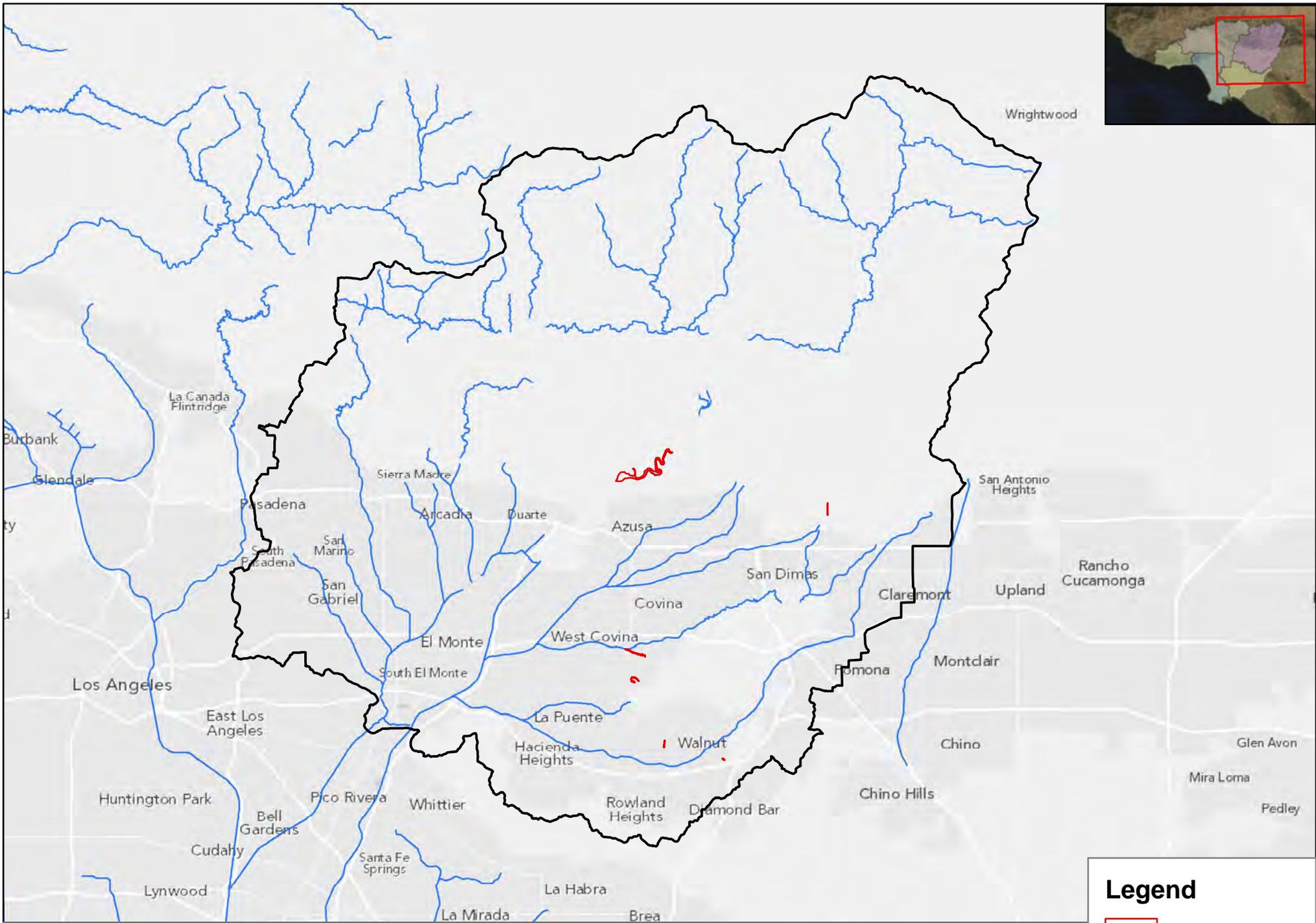
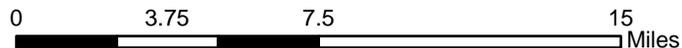


Figure A3

IRWMP Flood Targets
Upper San Gabriel and
Rio Hondo Rivers Subregion



Legend

- Flood Areas
- Major Channels

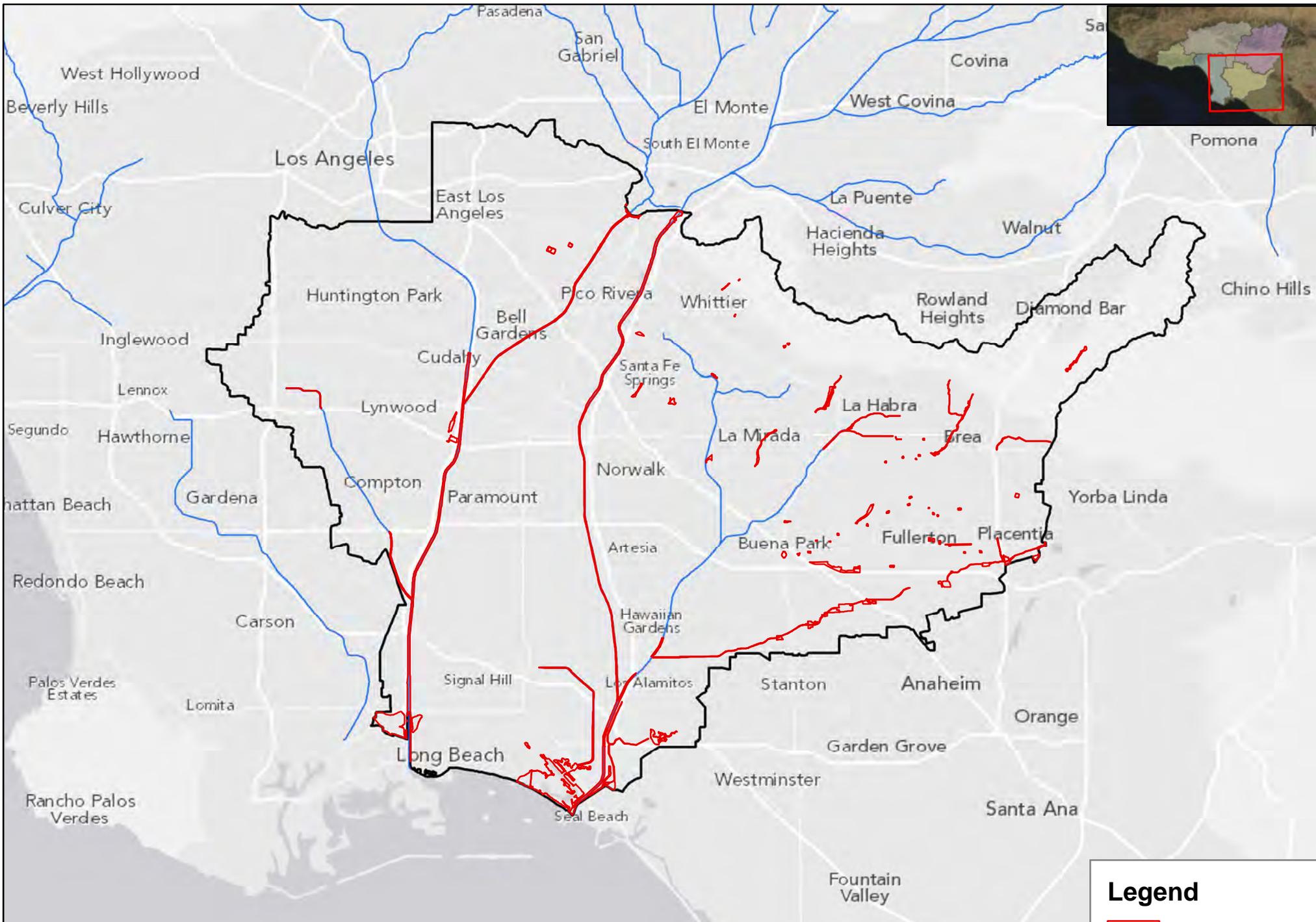


Figure A4

IRWMP Flood Targets
 Lower San Gabriel and
 Lower Los Angeles Rivers Subregion

0 3.75 7.5 15 Miles



Legend

- Flood Areas
- Major Channels

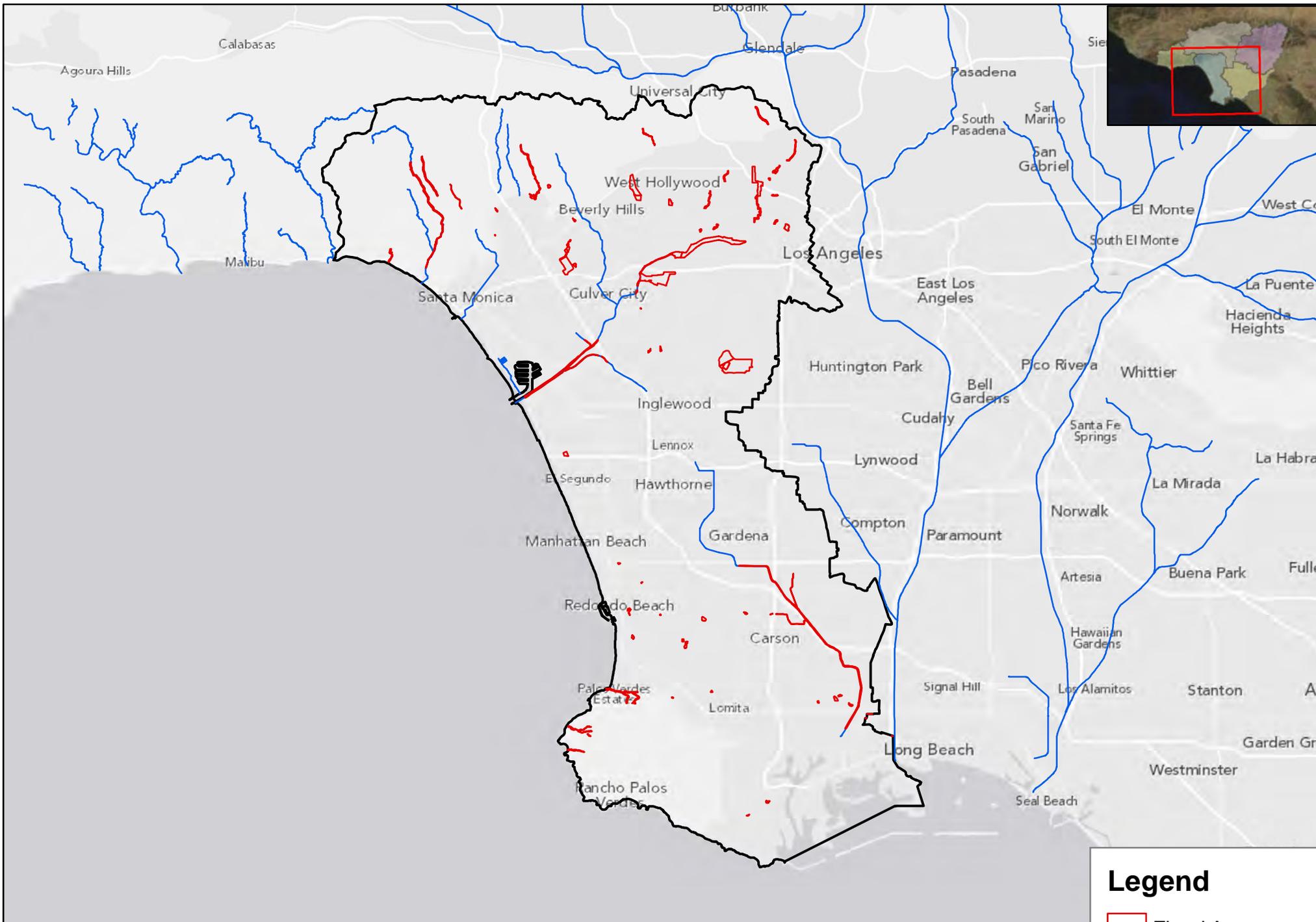
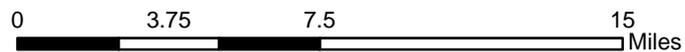


Figure A5

IRWMP Flood Targets
South Bay Subregion



Legend

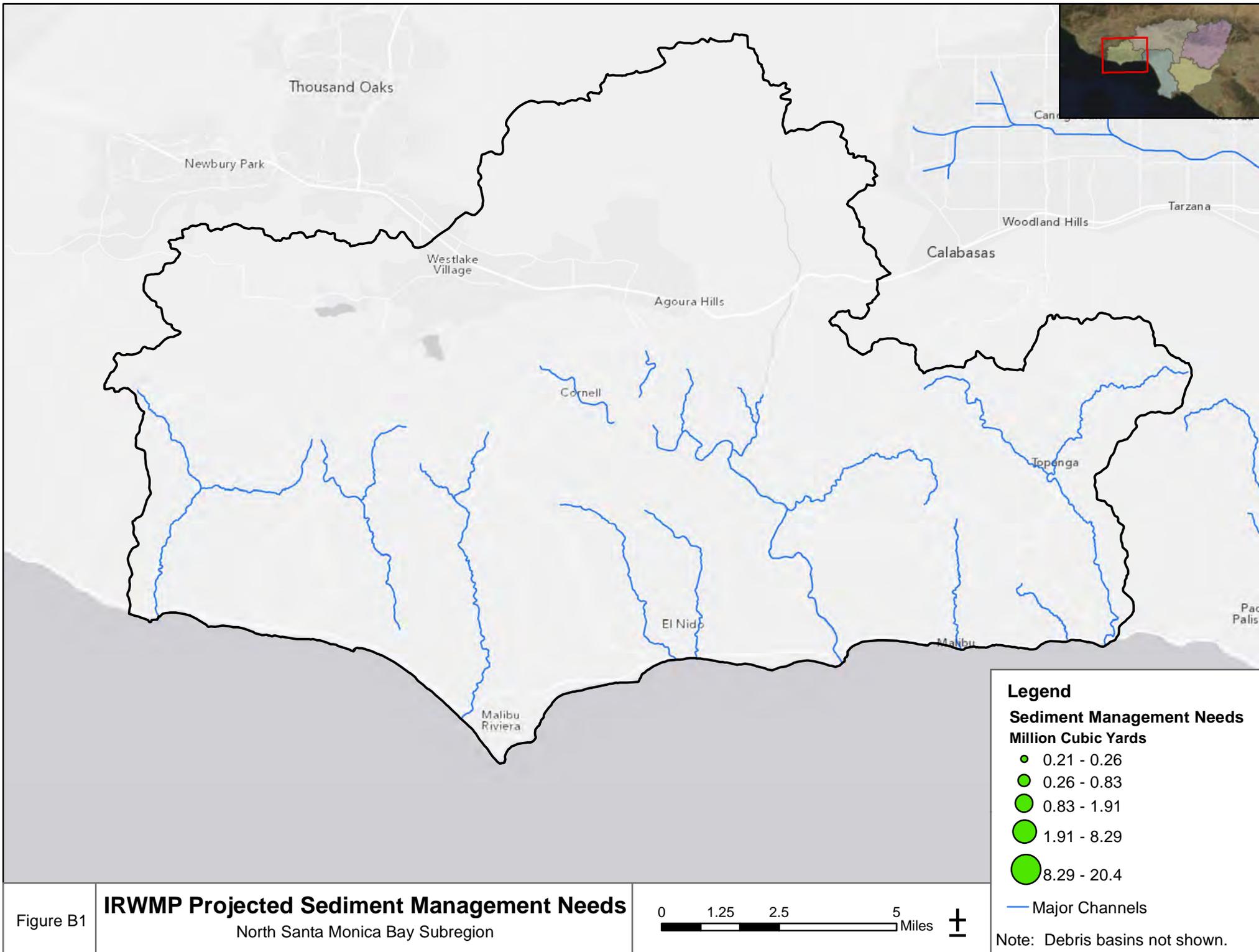
- Flood Areas
- Major Channels

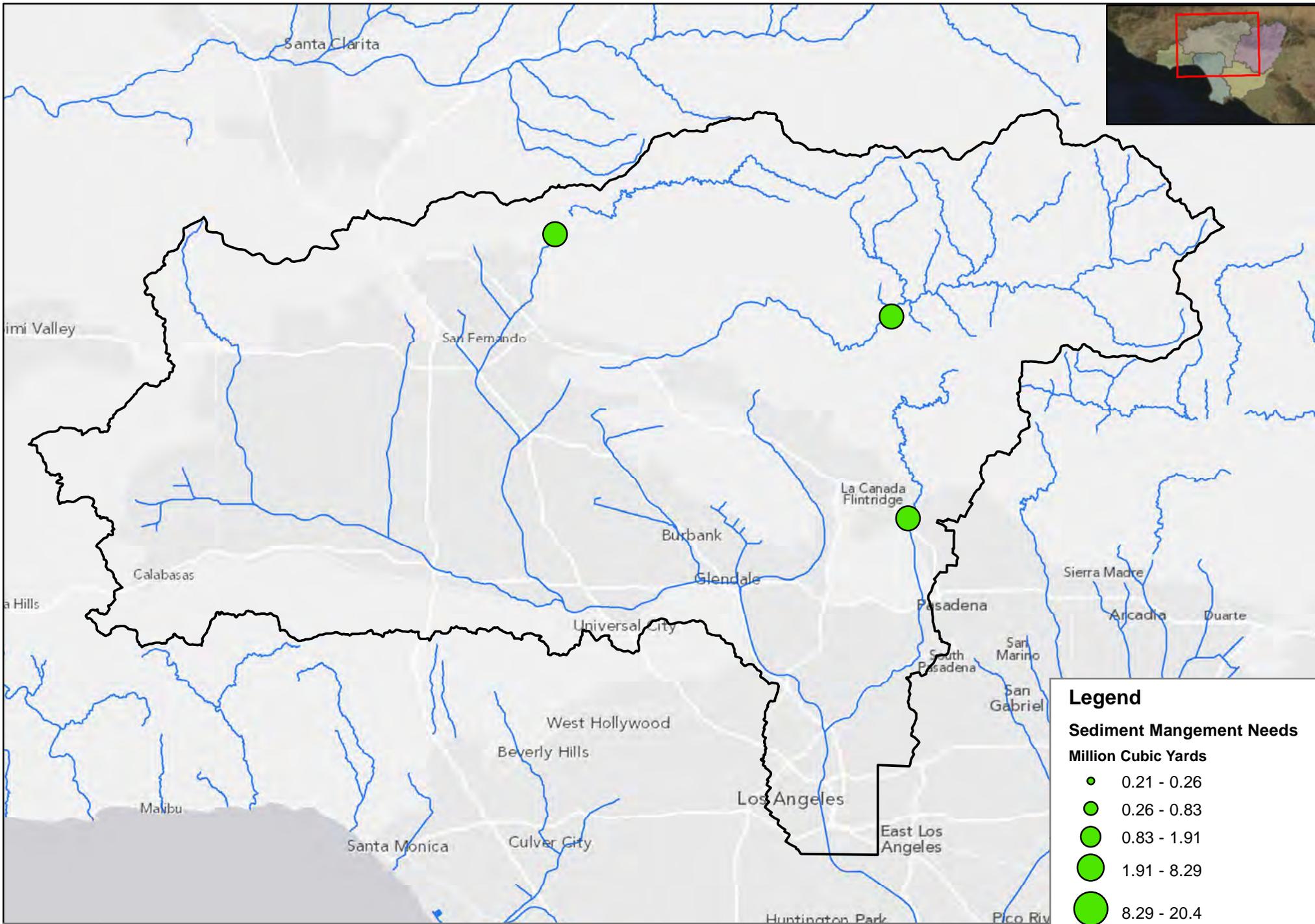


Appendix B – Maps of Sediment Management Targets by IRWMP Subregion

The following pages contain the subregional maps showing locations of the Sediment Management Needs for:

- **North Santa Monica Bay (B-1)**
- **Upper Los Angeles River (B-2)**
- **Upper San Gabriel and Rio Hondo (B-3)**
- **Lower San Gabriel and Los Angeles Rivers (B-4)**
- **South Santa Monica Bay (B-5)**





Legend

Sediment Management Needs
Million Cubic Yards

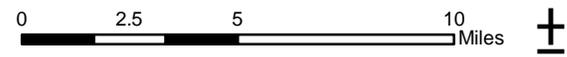
- 0.21 - 0.26
- 0.26 - 0.83
- 0.83 - 1.91
- 1.91 - 8.29
- 8.29 - 20.4

— Major Channels

Note: Debris basins not shown.

Figure B2

IRWMP Projected Sediment Management Needs
 Upper Los Angeles River Subregion



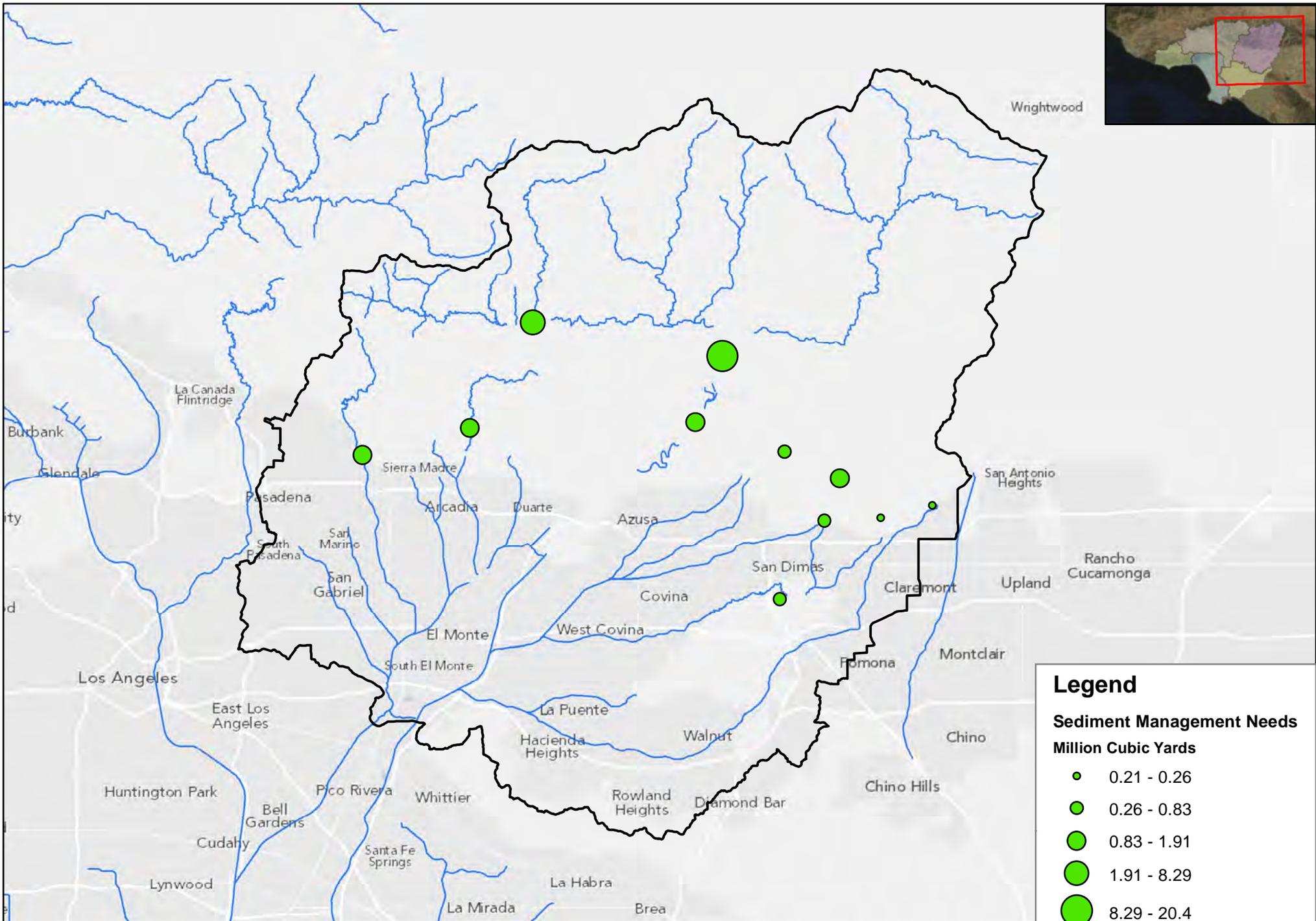


Figure B3

IRWMP Projected Sediment Management Needs

Upper San Gabriel and Rio Hondo Rivers Subregion

0 2.5 5 10 Miles



Legend

Sediment Management Needs

Million Cubic Yards

- 0.21 - 0.26
- 0.26 - 0.83
- 0.83 - 1.91
- 1.91 - 8.29
- 8.29 - 20.4

— Major Channels

Note: Debris basins not shown.

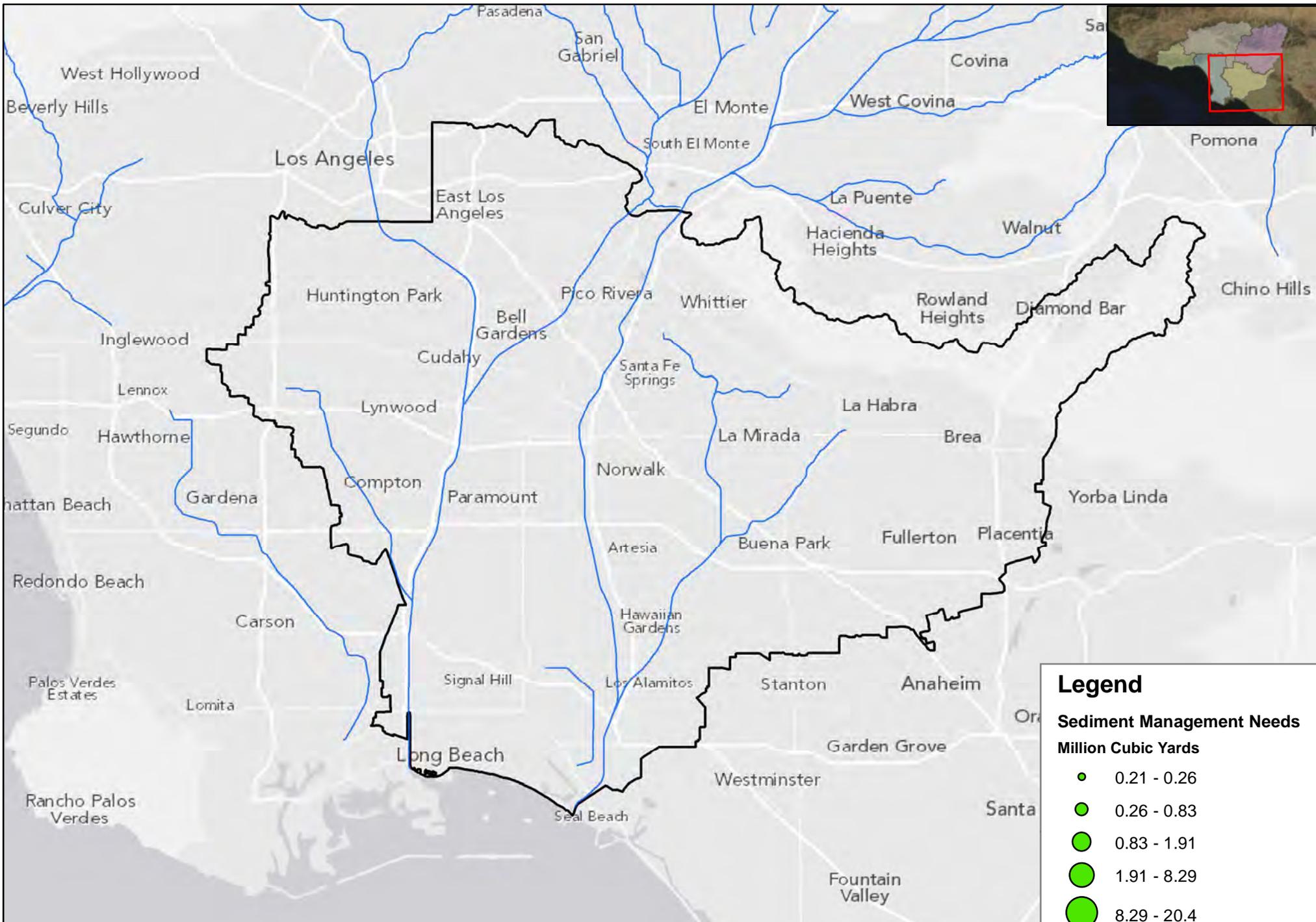


Figure B4

IRWMP Projected Sediment Management Needs
 Lower San Gabriel and
 Lower Los Angeles Rivers Subregion

0 1.25 2.5 5 Miles



Legend

Sediment Management Needs
Million Cubic Yards

- 0.21 - 0.26
- 0.26 - 0.83
- 0.83 - 1.91
- 1.91 - 8.29
- 8.29 - 20.4

— Major Channels

Note: Debris basins not shown.

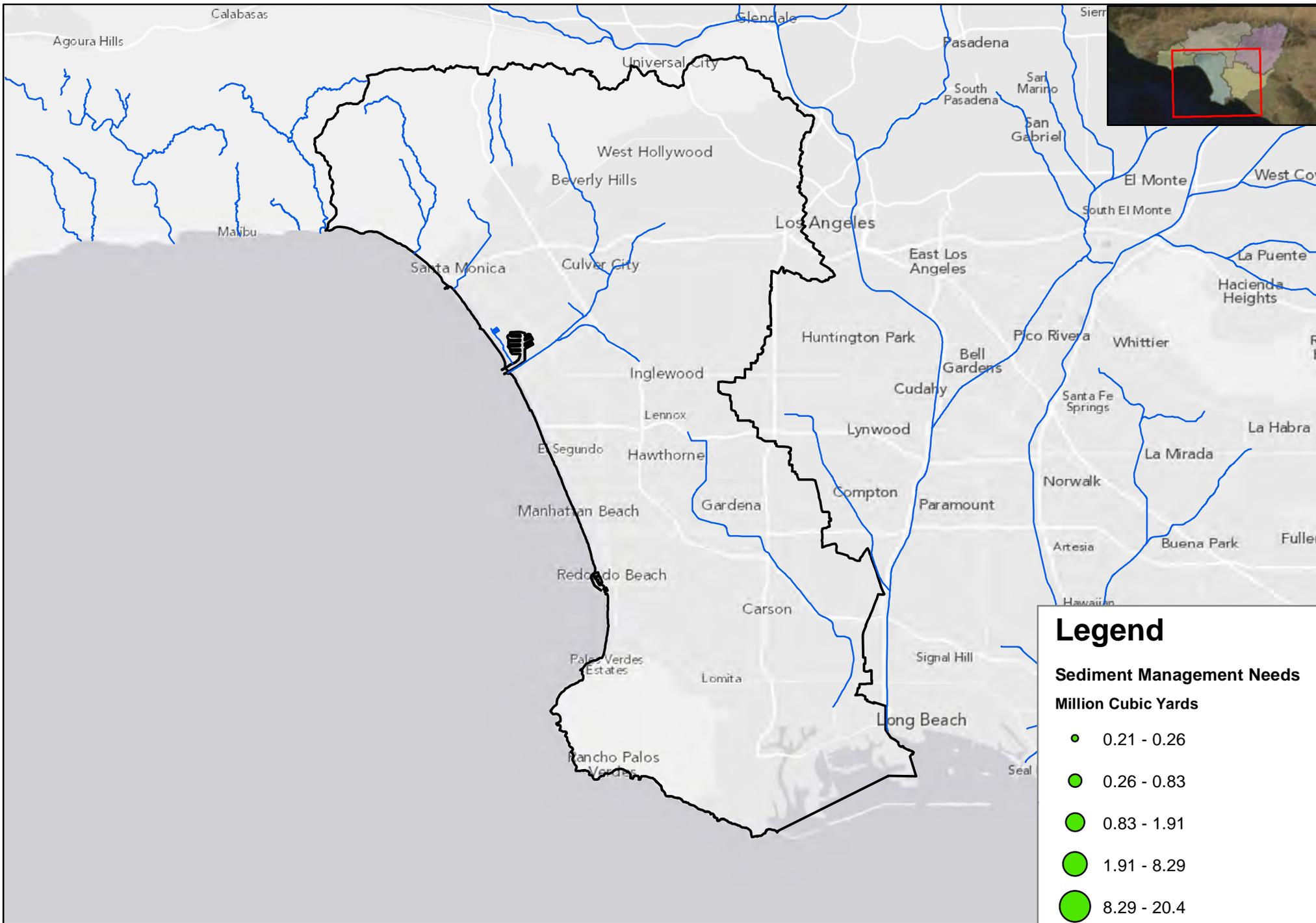


Figure B5

IRWMP Projected Sediment Management Needs
South Bay Subregion

0 2.5 5 10 Miles



Note: Debris basins not shown.